

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

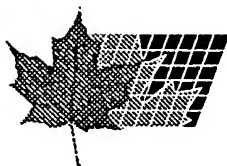
Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**



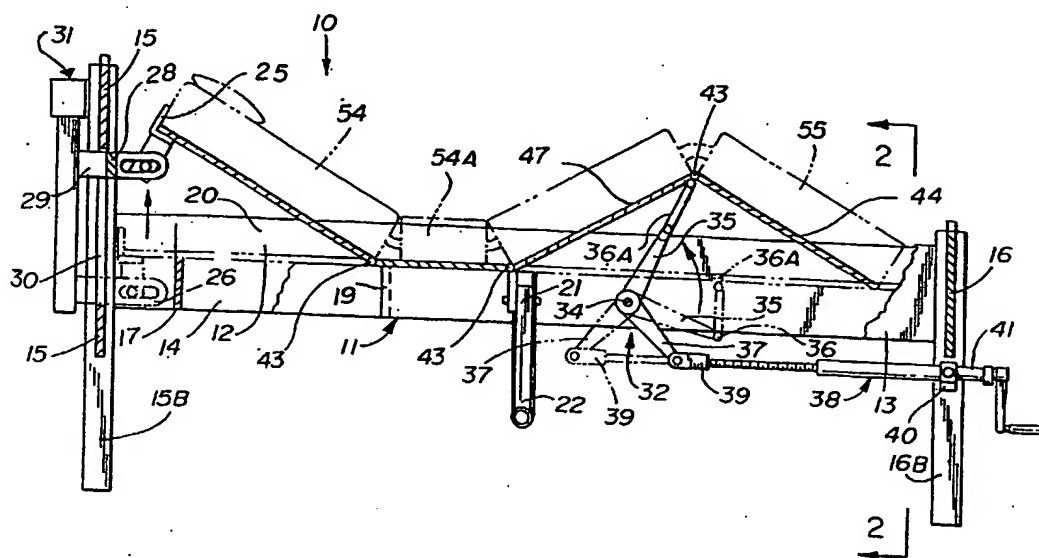
(72) Salonica, Frank T. (deceased), US

(71) Salonica, Frank T. (deceased), US

(51) Int.Cl.<sup>6</sup> A61G 7/02, A61G 7/015

(54) **LIT EN SECTIONS POUR MALADES ALITES AVEC BASSIN  
HYGIENIQUE JETABLE**

(54) **SECTIONAL INVALID BED WITH DISPOSABLE WASTE  
CONTAINER**



(57) Un lit d'invalid pour usage dans les hôpitaux et autres établissements pour invalides ou les patients grabataires qui permet de multiples configurations du matelas. Un support à segments pour matelas est placé sur une plate-forme à sections multiples sur l'ossature d'un lit avec des éléments de levage longitudinaux et divisés transversalement qui permettent de soulever sélectivement la tête et/ou le pied du lit transversalement au lit ou de façon longitudinale, les deux portions le long de l'axe central. La portion du matelas et de son soutien est ouverte pour recevoir un bassin hygiénique jetable qui se prolonge sous le lit.

(57) An invalid bed for use in hospitals and the like for invalids or bed-ridden patients to provide multiple adjustment mattress configurations. A segmented mattress support is positioned on a multi-sectioned platform on a bed frame with longitudinal and transversely divided lift elements selectively elevating a headrest portion and/or leg portion transversely in relation to the bed or longitudinally, both portions along its central axis. The portion of the mattress and its support is apertured to accept a disposable bed pan which extends below the bed.

## SECTIONAL INVALID BED WITH DISPOSABLE WASTE CONTAINER

Background of the InventionTechnical Field:

5 The present invention relates to hospital beds that can be adjusted to elevate portions of the mattress as well as being equipped with internal disposable bed pan configurations.

Description of Prior Art:

10 Prior art devices of this type have relied on a number of different configurations to elevate and adjust a special mattress equipped bed which is equipped with a toilet or bed pan construction below the bed so that the patient can easily be positioned thereon. See for example U.S. Patents 2,872,689, 4,307,477, 4,754,508 and and 4,847,929.

15 In U.S. Patent 2,872,689 a hospital bed with laterally adjustable sections is shown wherein two adjustable spring sections can be moved on a support track to reveal access to a bed pan positioned therebelow the collection of human waste.

20 U.S. Patent 4,307,477 is directed towards a bedding arrangement that uses a pair of adjacent pivoted mattress support frames that can be raised from respective opposing sides selectively elevating the head portion or the leg portion of the two-piece

mattress.

A third elevation can be achieved by a secondary pivot frame with the head portion that elevates the person for access to a bed pan positioned on the remaining non-elevated portion.

5        Patent 4,754,508 is directed to an adjustable mattress support with an internal bed pan movable between a horizontal position and a tilt position for access to multiple waste receiver compartments positioned on a rotating table beneath the bed.

10        A bed with adjustable portions is disclosed in U.S. Patent 4,847,929 having a system of hydraulic cylinders to permit the tilting of the bed portions pivoted to a central support frame and to one another.

Summary of the Invention

15        An adjustable hospital bed having an apertured section to receive a self-contained disposable waste receiving container. A multiple segmented mattress and mattress support platform configuration can be elevated both transversely in three traditional segmented areas as well as longitudinally joining multiple support areas together to move the patient by rolling  
20        to be positioned on and off the waste integrated waste receiving

container.

Description of the Drawings

Figure 1 is a side plan view of the bed with portions broken away illustrating both normal and elevated positions indicated in solid and broken lines;

Figure 2 is a sectional view on lines 2-2 of Figure 1;

Figure 3 is a top plan view of the bed with portions broken away for illustration purposes;

Figure 4 is a perspective view of the support platform in solid lines and illustrating the various elevational position of the platforms in broken lines; and

Figure 5 is a perspective view of a disposable waste container for use within the bed invention.

Description of the Preferred Embodiment

Referring to Figures 1-3 of the drawings, an adjustable bed can be seen having a main support frame 11. The main support frame 11 is comprised of spaced parallel frame members 12 and 13 and a parallel central support frame member 14, all of which are secured to a headboard 15 with internal legs 15A and 15B and a footboard 16 with internal legs 16A and 16B at their respective

opposing free ends as will be well known to those skilled in the art.

Multiple inner connecting frame support elements 17 extend transversely between said respective frame members 12 and 13 and said central support member 14 defining a support grid. Two of said transverse frame elements 17 are foreshortened at 18 and intersect a circular support element 19 positioned therebetween which also intersects said center support member 14 as best seen in figure 3 of the drawings in dotted lines. An elongated elevational angle 20 is movably positioned adjacent said respective frame member 12 by a central pivoted support bracket 21. The support bracket 21 is attached to a vertically movable arm assembly 22 interconnected to a driven attachment rod and crank assembly 23 as will be well known and understood by those skilled in the art.

A pair of secondary elevational angles 24 and 25 are positioned in spaced longitudinally aligned relationship adjacent said headboard 15 on either side of said central support member 14 heretofore described. Each of said secondary elongated angles 24 and 25 are adjustable secured to slotted bifurcated vertical support arms 26 and 27 respectively, as best seen in figure 1.

The arms 26 and 27 extend from an interconnecting bracket 28 therebetween having a centrally positioned mounting tab 29 extending at right angles therefrom. The mounting tab 29 extends through a vertical slot at 30A in the headboard 15 and is secured to a central vertically aligned drive rod 30 that can be advanced along its vertical axis by a crank activated drive mechanism 31 as best seen in figures 1-3 of the drawings.

A pair of spaced aligned central elevational armature assemblies 32 and 33 are positioned respectively between said frame members 12 and 13 and the central support member 14. Each of the armature assemblies 32 and 33 are secured to a drive and support rod 34 extending transversely between and through said support frame members 12 and 13 and central support member 14 hereinbefore described.

Each of said elevational armature assemblies 32 and 33 is comprised of a drive lever 35 keyed to said drive and support rod 34 having a bifurcated apertured fitting 36 on its free end.

A T-shaped bed engagement member 36A is pivotally secured to said fitting 36 and allows for full arcuate movement as the T-shaped bed engagement member 36A is advanced vertically.

The drive and support rod 34 is rotated on its longitudinal axis by an actuator arm 37 secured thereto. Said actuating arm 37 is in turn pivotally secured to a telescopically extensible rod assembly 38 by an apertured fitting 39. The rod assembly 38 extends from said apertured fitting 39 through said foot board 16 via an aperture at 40. A crank and handle assembly 41 is attached to said rod assembly 38 so that upon rotation of the same, the rod assembly 38 extends outwardly along its longitudinal axis by the nature of its screw thread configuration thus moving the actuator rod 37 which in turn rotates the support rod 34 and attached drive levers 35 in an arcuate path as defined by directional arrows as best seen in Figure 1 of the drawings.

Referring now to figures 3 and 4 of the drawings, a multiple segmented mattress support platform assembly 42 can be seen in which flat rigid platforms are continuously hinged together adjacent their respective abutting edges by hinges 43.

A first set of generally square platform elements 44 and 47 extend from said footboard 16 and are supported by said elevational angle 20, said central support member 14 and a fixed platform support elongated angle 20A secured to said frame member 13 in oppositely disposed relation to said hereinbefore described

elongated elevational angle 20 as best seen in Figures 2 and 3 of the drawings. The platform elements 44 and 46 are hinged independently to one another as described so as to allow for both transverse and longitudinal hinge movement therebetween.

5       A second set of support platform elements 48 and 49 extend from said first set being rectangular in configuration with opposing arcuate notches at 50 and 51 therein defining a circular opening therebetween.

10       A third set of support platform elements 52 and 53 can be seen secured to said second set of support platforms and each other along their abutting surfaces 53A and 52A by the hinge elements 43 as hereinbefore described.

15       In operation, the respective support platform sets can be hinged along their transverse hinges 43 by the respective engagement of said elevational armature assemblies 32 and 33 in said first platform set as seen in Figure 1 and alternately or simultaneously by said secondary elevational angles 24 and 25 in support pivoting engagement with said third support platform set 52 and 53 elevating the same by the hinge access inter-  
20       connecting said second and third support platform sets again seen

in Figure 1 and illustrated by broken lines in Figure 4 of the drawings.

Referring now to Figure 2 of the drawings, the platform sets can all be simultaneously elevated along their perimeter edge so as to pivot along a longitudinal hinged center line HC by engagement and elevation with the elongated elevational angle 20 as hereinbefore described.

A multiple hinged segment mattress 54 is illustrated in broken lines in Figures 1 and 2 and is segmented along the hinged lines of said multiple support platform assembly 42 with the inclusion of a removable circular tapered mattress plug 54A positioned over the circular support element 19 within the secondary support platform segments 48 and 49. The circular mattress plug 54A can be removed and a disposable waste container 55 seen in Figure 5 of the drawings can be inserted within the opening for use by bedridden patients. The waste container 55 has a semi-rigid circular flange 56 defining a support collar engageable over the adjacent segmented mattress portions with an interconnected collapsible thin wall cylindrical bag 57 extending therefrom.

2176064

Both the circular flange 56 and the bag 57 are preferably made of synthetic resin material and are designed for one-time use only.

Thus it will be seen that a multiple adjustable self-contained  
5 invalid bed has been illustrated and described which allows for multiple mattress elevation, both transversely across the bed as well as longitudinally, and has the inclusion of an integral waste container which can be selectively positioned within an aperture formed by removal of a mattress plug so as to provide  
10 ease of use to bedridden patients which can be maneuvered on the bed by activation of elevational mechanisms hinging the segmented mattress along a longitudinal axis pivot line.

It will therefore be apparent to those skilled in the art that various changes and modifications may be made therein without  
15 departing from the spirit of the invention.

CLAIMS

1. A multiple positioned invalid bed comprising; a main support frame, multiple segmented support platform elements within said main support frame, multiple elevation angles movably secured to said main support frame engageable in portions of said segmented support platform elements, a bed engagement member and a drive lever for selective movement of said engagement support platform elements, means for advancing said drive lever and said engagement member, a segmented mattress on said segmented support platform elements, said segmented platform support elements being pivotally secured to one another defining first, second, and third platform sets respectively, aligned openings in said second platform set and said mattress, means for moving said multiple elevational angles independently, disposable waste containers selectively registerable within aligned openings in said second platform set and said segmented mattress.

2. The multiple positioned invalid bed of claim 1 wherein said main support frame comprises spaced parallel frame members, a headboard and a footboard, and a central support element extending therebetween, multiple interconnected frame elements interengaging said central support element and said frame members.

3. A multiple positioned invalid bed of claim 1 wherein said means for advancing said drive lever comprises a telescopically extensible screw rod assembly interengaging said drive lever for advancement thereby.

4. A multiple positioned invalid bed of claim 1 wherein said disposable waste container comprises; a circular flange defining an opening therein, a collapsible bag extending from said circular flange and aligned with said opening therein.

5. The multiple positioned invalid bed of claim 1 wherein said multiple segment support platform elements are hinged to one another along adjacent edges for transverse and longitudinal pivoted movement in relation to one another.

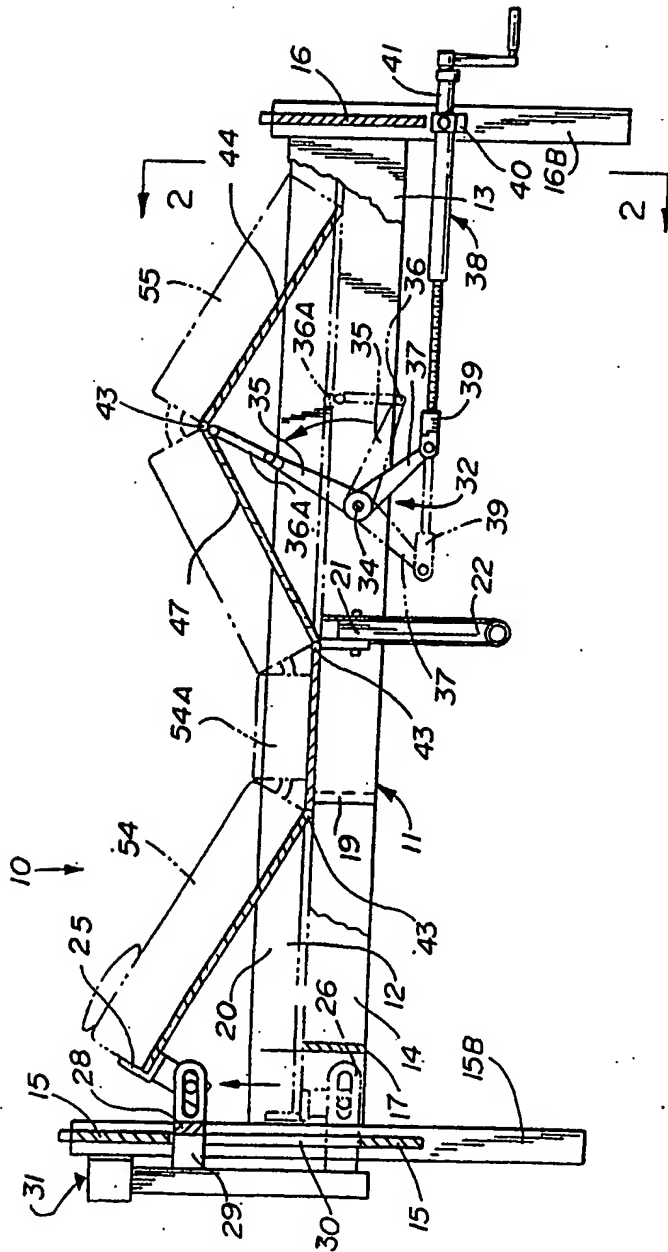


FIG. 1

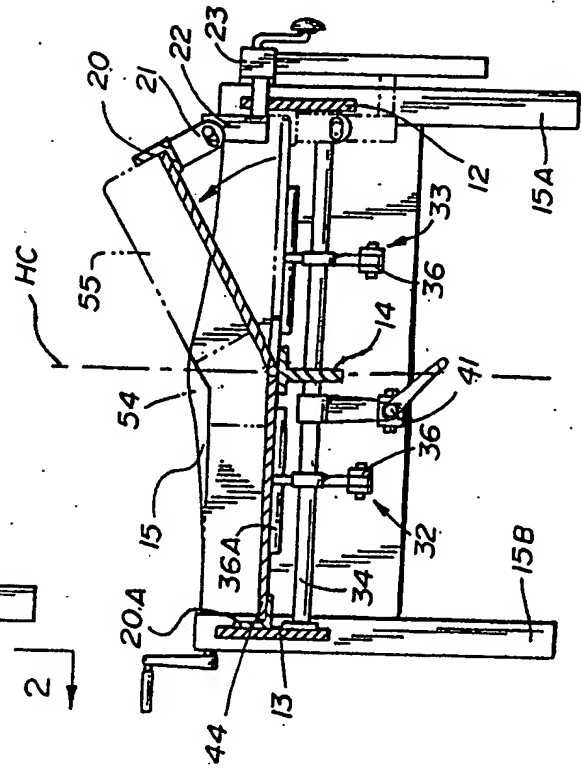
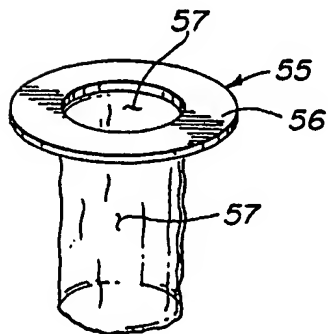
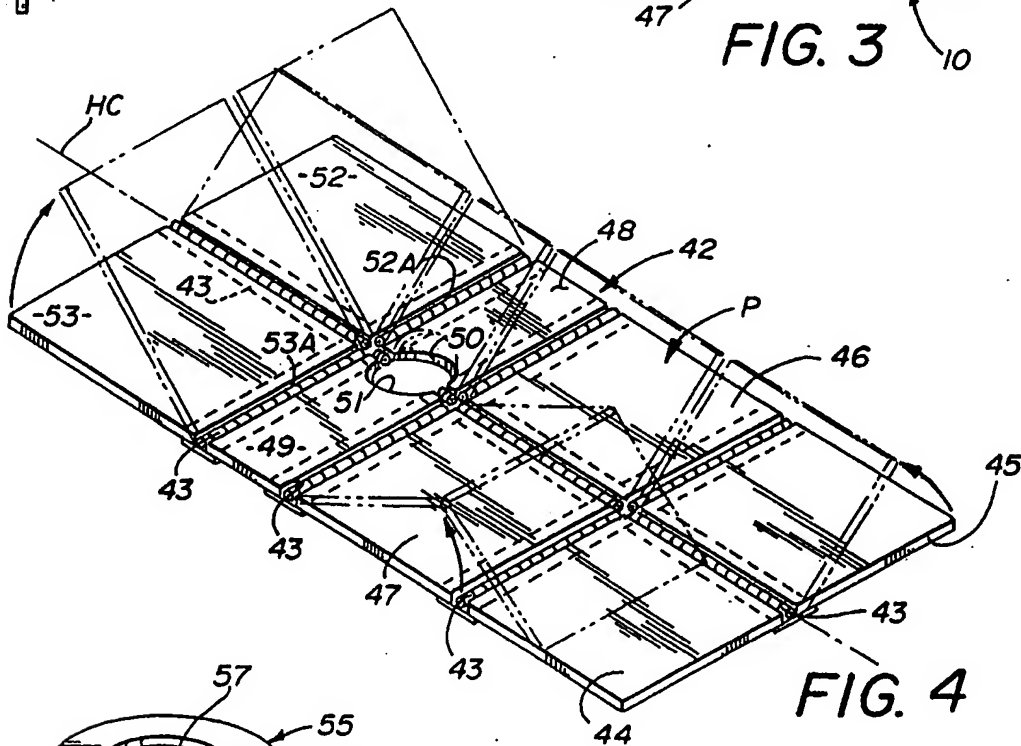
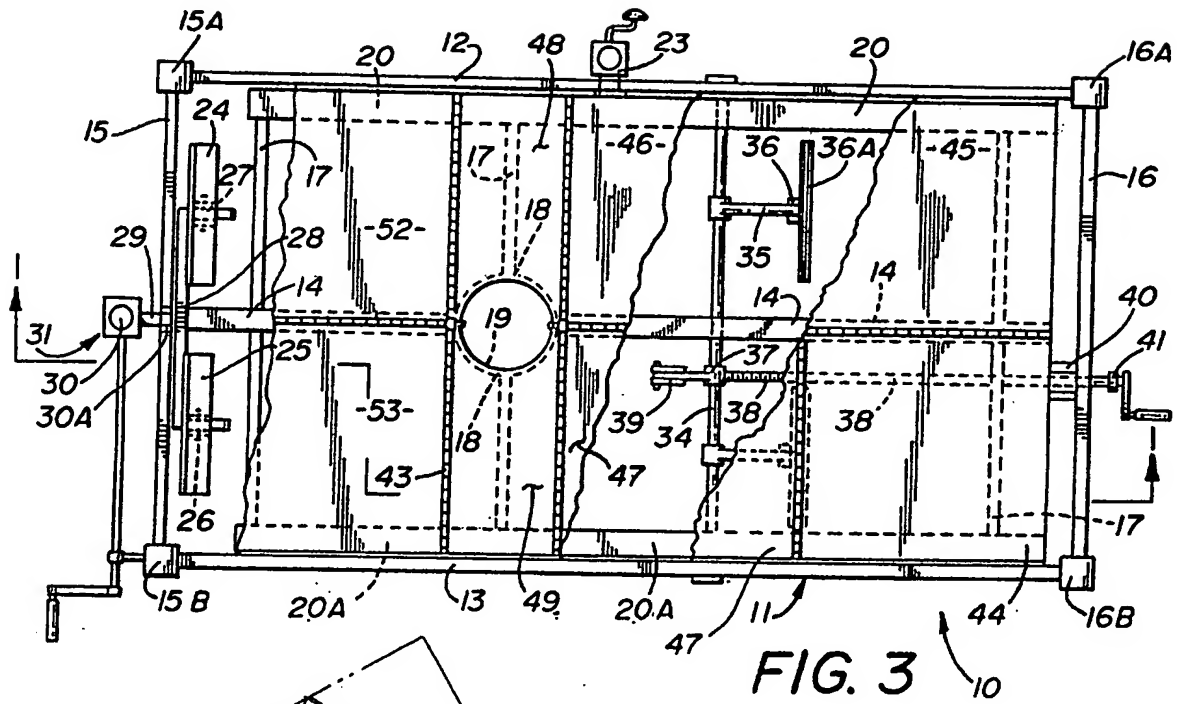
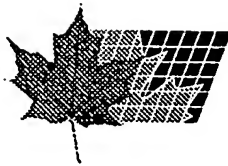
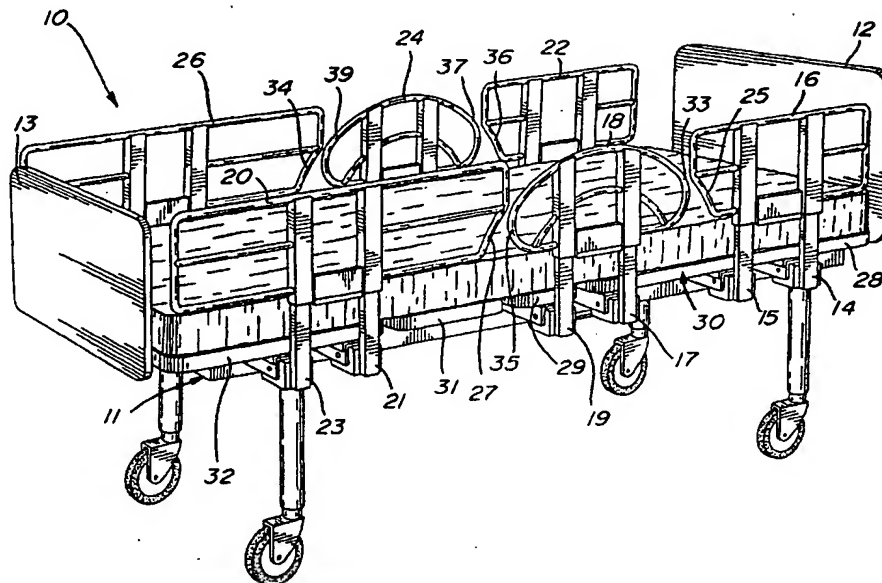


FIG. 2





(72) Laganière, Eric, CA  
(72) Lemire, Guy, CA  
(71) BERTEC MÉDICAL INC., CA  
(51) Int.Cl.<sup>6</sup> A47C 21/08  
(54) **PROTECTEUR LATÉRAL ARTICULE**  
(54) **SPLIT SIDE GUARDS**



(57) Cette invention concerne des barrières latérales de lit d'hôpital en plusieurs parties dont les éléments adjacents présentent des bouts au moins en partie incurvés afin de décrire, à la manoeuvre, sensiblement un arc de cercle dont le centre correspond au point de pivotement de l'une des sections de la plate-forme porte-matelas et, ce faisant, de laisser un espace libre minimal entre les éléments de la barrière latérale durant leur abaissement ou relevage et à toutes les positions de la plate-forme susmentionnée, avec pour résultat l'impossibilité pour un patient de passer ou de se coincer dans l'espace libre entre les éléments de la barrière latérale.

(57) Provided herein are bed split side guards with adjacent units presenting at least partly curved ends so as to essentially follow a circular arc shape having its center at the pivot point of one of the sections of the bed mattress deck, thus providing a minimal spacing between the split side guard units during articulation and at any position of the mattress deck, hence preventing patient movement or entrapment through the bed side guard gaps.

**BACKGROUND OF THE INVENTION**

The present invention relates to hospital bed side guards to prevent patients from falling off the bed. More specifically, the present invention relates to collapsible split side guards for adjustable beds.

5           Hospital beds typically include collapsible side guards of parallelogram or rectangular design, wherein the side guards are split in at least two separate portions or units generally corresponding to the length of each adjustable and articulated portion of the mattress support deck. With such configurations, a rather large gap is left between adjacent side guard  
10       units to allow articulation of the different sections of the bed mattress deck when the side guards are in the raised position. As a result, serious injuries can occur when limbs or other parts of the body of a patient enter those gaps and become entrapped or otherwise caught between adjacent side guard  
units.

15           As a result of this problem, there have been efforts to overcome the hazard with conventional bed split side guards. U.S. Patents Nos. 5,381,571 and 5,485,699 disclose a movable protective barrier with a lock mounted on the bed guard as to maintain or close the gaps between the split side guards units.

2181021

- 2 -

However, closures merely unsatisfactorily reduce the potential for patient injury when the mattress deck is horizontally positioned, and they become inappropriate as the mattress deck sections are being articulated or secured at different positions. Thus, there remains a need for improvement

5 in the safety of split side guard devices.

**SUMMARY OF THE INVENTION**

It is thus an object of this invention to provide split side guards which greatly reduce the hazards associated with conventional bed split side guards while allowing normal articulated functions of an adjustable hospital  
5 bed.

It is a further object of the present invention to provide a split side guard configuration having minimal spacing between adjacent split side guard units while the head section of the mattress deck is being articulated and secured at different positions.

10 In one embodiment, the present invention relates to a bed comprising a frame and a mattress deck including a series of sections pivotally mounted in relation with one another and support means mounted to each said sections. In the present invention, split side guards are mounted to said support means on the bed and the split side guards  
15 comprise side guard units being disposed closely adjacent to one another in generally co-planar relationship, each side guards units having opposite ends, the ends of the side guard units adjacent to another unit having at least in part a curve-like profile essentially based on a circular arc shape having its center at the pivot point of one of such sections of the mattress  
20 deck, allowing pivotal movement of the side guard units as a result of pivotal movement of said sections, without contacting one another.

Other objects and further scope of applicability of the present invention will become apparent from the detailed description given hereinafter. It should be understood, however, that this detailed description, while indicating preferred embodiments of the invention, is given by way of  
5 illustration only, since various changes and modifications within the spirit and scope of the invention will become apparent to those skilled in the art.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

Preferred embodiments of the invention are described in detail hereinafter with reference to the accompanying drawings, in which:

10 FIG. 1 is a perspective view of a hospital bed equipped with three-unit split side guards according to the present invention, showing the side guards in an elevated position.

FIG. 2 gives a side view of a conventional split side guard also illustrating the split side guard units as the bed is in its elevated position.

15 FIG. 3 is a side view of the embodiment of the present invention illustrated in FIG. 1 showing the movement of the pivotable units when the mattress deck sections are in an elevated position.

FIG. 4 gives a side view of a two-unit embodiment constructed in accordance with the present invention, showing also the pivotal movement or the head unit along with the head section of the mattress deck to which it is attached.

5                   FIG. 5 is a side view of an elongated two-unit split side guard constructed in accordance with the present invention, illustrating also pivotal movement of head unit along with the head section of the mattress deck to which it is attached.

                  FIG. 6 is a side view of another two-unit embodiment  
10               constructed in accordance with the present invention, depicting as well movement of the bed mattress deck sections and the side guard units accordingly.

                  FIG. 7 is a side view of an elongated two-unit embodiment  
constructed in accordance with the present invention, pivotal movement of  
15               the units being also illustrated.

#### **DETAILED DESCRIPTION**

Referring to FIG. 1, there is depicted a standard hospital bed  
10 comprising a frame 11, a headboard 12, a footboard 13 and a mattress

deck 30 having a series of sections 28, 29, 31, 32 pivotally mounted in relation with one another. Support means 14, 15, 21, 23 are mounted on the mattress deck sections while support means 17, 19 are fixed to the bed frame 11. Split side guard units 16, 18, 20, 22, 24, 26, constructed in accordance with the present invention, are mounted on the support means. The units 16, 18, 20, 22, 24, 26 of the split side guards have their adjacent sides 25, 33, 35, 27, 36, 37, 39, 34 generally curved as to essentially follow a circular arc shape having its center at the pivot point (not shown) of section 28 of mattress deck 30, allowing pivotal movement of the units as the mattress deck sections are being articulated. In this embodiment, units 20, 26 of the split side guards are elongated in order to cover completely the sides of the hospital bed 10.

FIG. 2 of the drawings illustrates a conventional split side bed guard presenting a rectangular design. Large spacing between units 38 and 40 is necessary to allow movement of the units alongside the mattress deck units 28, 29, 31, 32 when the bed is articulated.

FIG. 3 gives a side view of the embodiment illustrated in FIG. 1, showing the orientation of unit 16 and unit 20 when the bed mattress deck sections 28, 29, 31, 32 are in an elevated position. A curved configuration of sides 25, 33, 35, 27 based on a circular arc shape having its center at the pivot point 42 of section 28 of mattress deck 30 allows pivotal movement of

units 16 and 20 in respect with the fixed unit 18 while spacing between the units is minimal.

Another embodiment is illustrated in FIG. 4 where the split side guard comprises two units 16 and 45. The support means 14, 15, are  
5 mounted on the mattress deck sections 28, while support means 44, and 46 are fixed to the bed frame 11. In accordance with the present invention, sides 25 and 41 of units 16 and 45 have a curve-like profile based on a circular arc shape having its center at the pivot point 42 of section 28 of mattress deck 30 to allow pivotal movement of the units 16 and 45 alongside  
10 the bed mattress deck sections 28, 29, 31, 32.

FIG. 5 shows an elongated split side guard unit 43 in another embodiment of the invention, protecting completely the bed side.

Another embodiment is shown in FIG. 6 where the split side guard comprises two units 48 and 49 of essentially similar lengths. Support  
15 means 52, 53, 54, 55 are fixed to sections 28 and 32 of the mattress deck 30. Adjacent sides 50 and 51 present a curve-like profile so as to follow a circular arc shape having its center at the pivot point 42 of section 28 of the mattress deck 30.

Finally, FIG. 7 depicts a two-unit split side guard as shown in  
20 FIG. 6, units 56 and 57 being elongated as to completely protect the bed

side. Support means 14 and 15 are fixed to section 28 of the mattress deck 30, while support means 21 and 23 are fixed to section 32 of mattress deck 30. As in FIG. 6 and contrary to guards shown in FIG. 4 and FIG.5, the guards present a gap located at the opposite side of the circular arc shape.

5                   It is thus seen that the present invention provides a net improvement to standard hospital bed split side guards so as to eliminate the likelihood of patient entrapment through the gap existing between split side guard units. As many variations will become apparent to those skilled in the art from a reading of the foregoing disclosure, such variations are embodied  
10                   within the spirit and scope of this invention as defined by the following appended claims.

What is claimed:

1. In a bed comprising a frame and a mattress deck including a series of sections pivotally mounted in relation with one another and support means mounted to each said sections, split side guards mounted to  
5 said support means, said split side guards comprising side guard units being disposed closely adjacent to one another in generally co-planar relationship, each said side guards units having opposite ends, the ends of said side guard units adjacent to another unit having at least in part a curve-like profile essentially based on a circular arc shape having its center at the pivot point  
10 of one of such sections of said mattress deck, allowing pivotal movement of said side guard units as a result of pivotal movement of said sections, without contacting one another.

2. The improvement in accordance with claim 1 wherein each said split side guards is composed of two side guard units.

15 3. The improvement in accordance with claim 1 wherein each said split side guards is composed of three side guard units.

4. The improvement in accordance with any of the preceding claims wherein said side guard units consist of an assembly of tubular members.

2181021

- 10 -

5. The improvement in accordance with claim 4 wherein said tubular members are essentially made of steel.

2181021

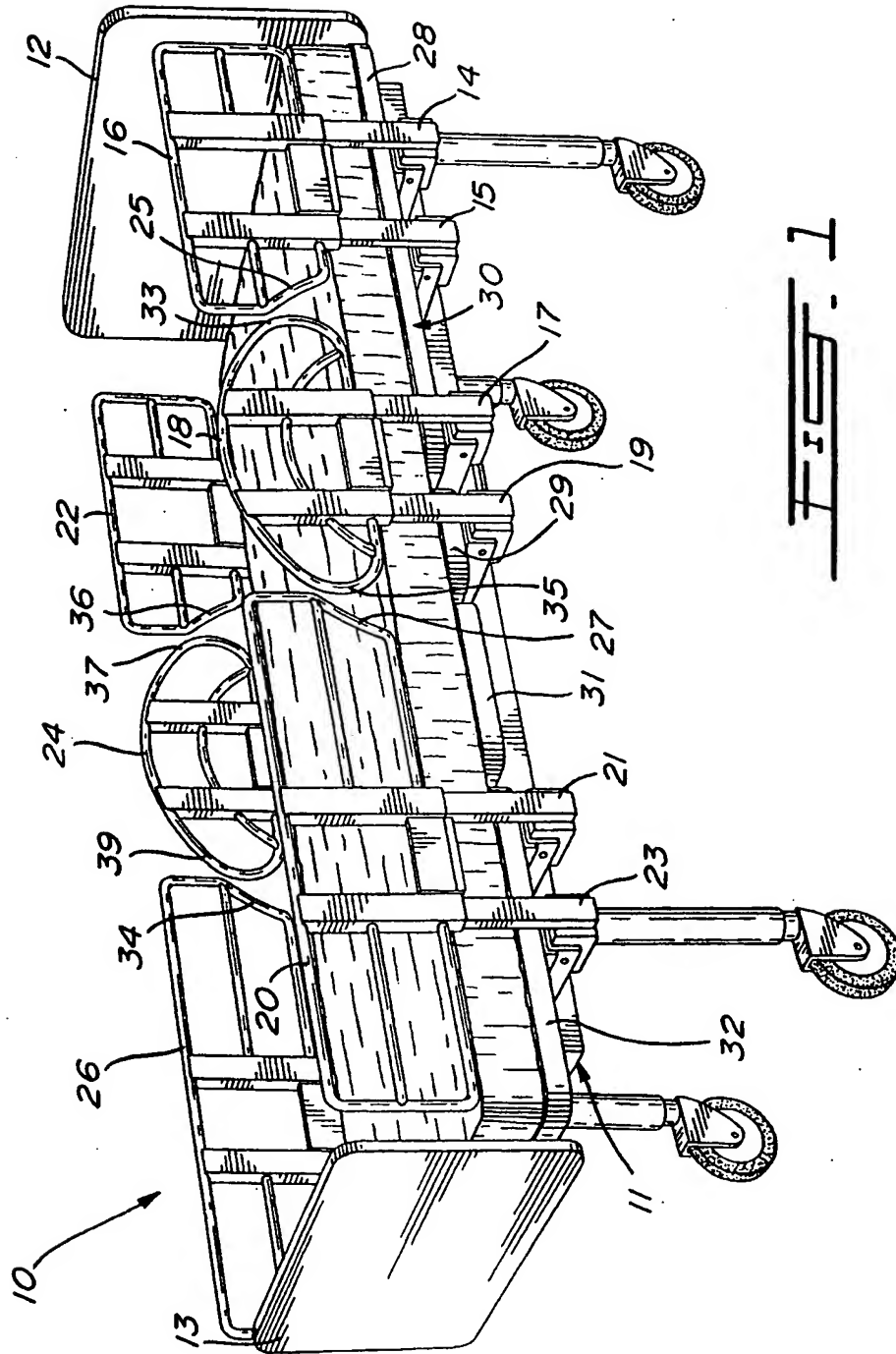
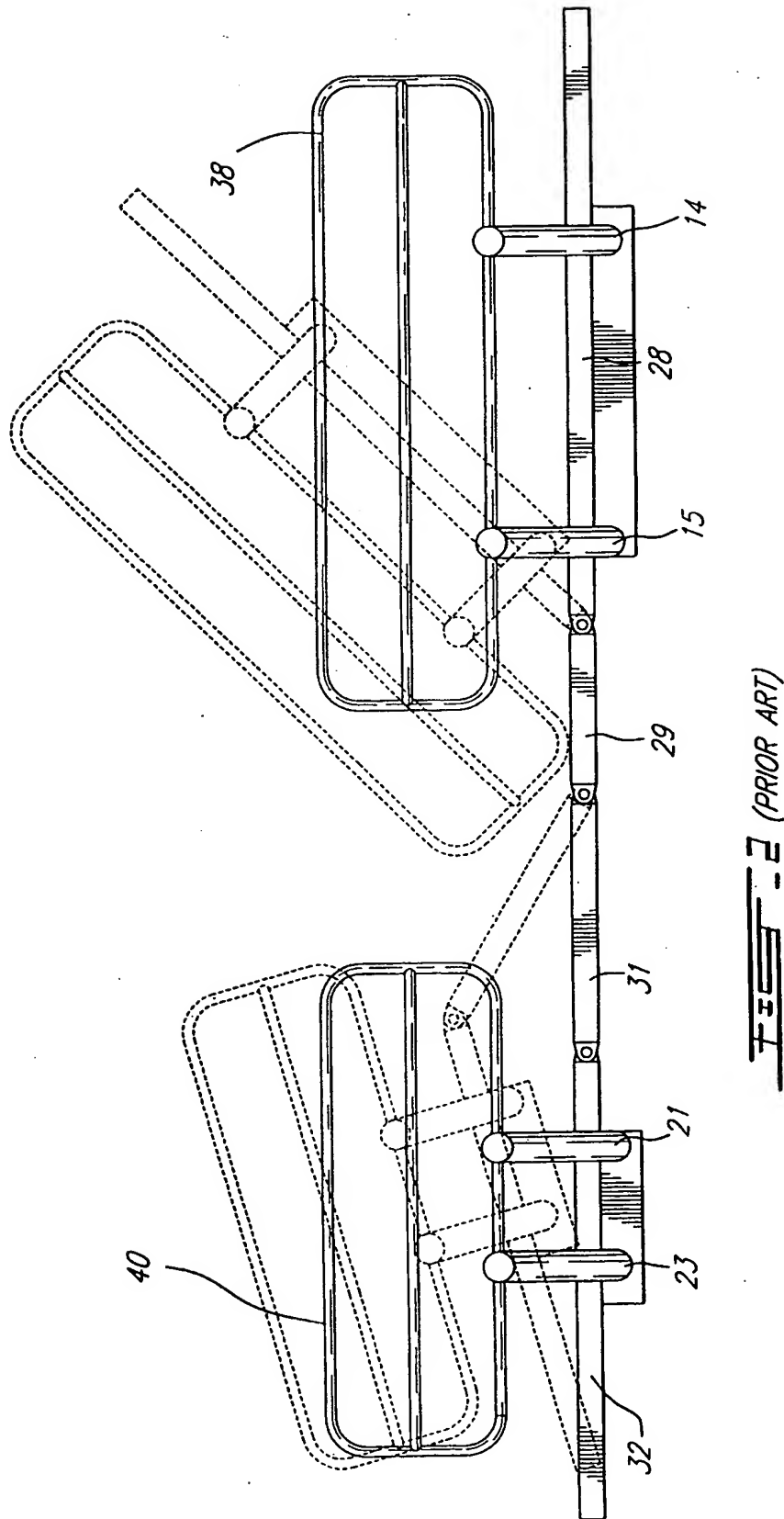


FIG. 1

*By Andrew Lloyd Dubuc & Martinus Wolken*

2181021



*Andreas J. Dube & Martin W. W. W.*

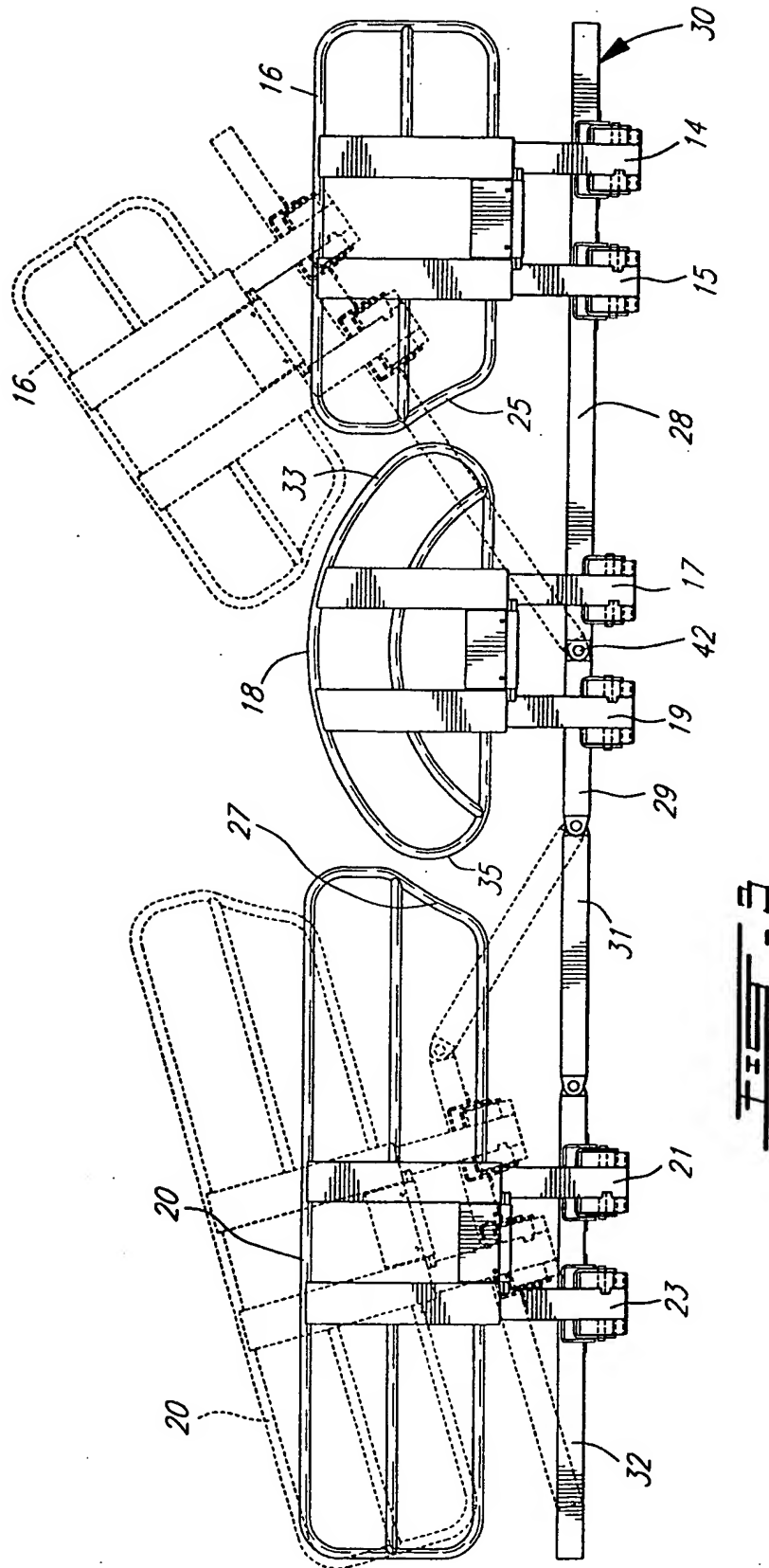


FIG. 3

Andrew J. Duhon & Martin W. Allen

2181021

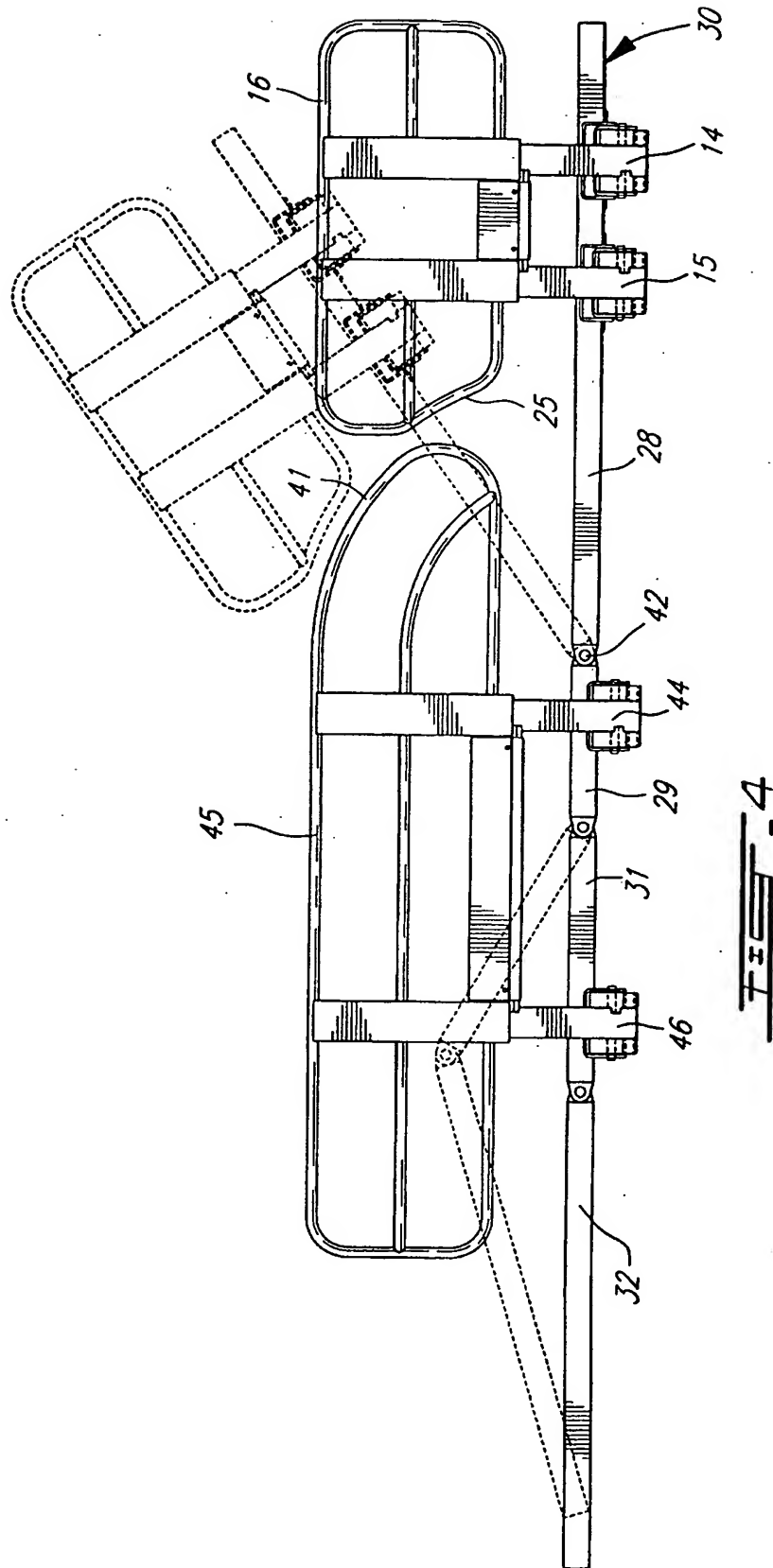
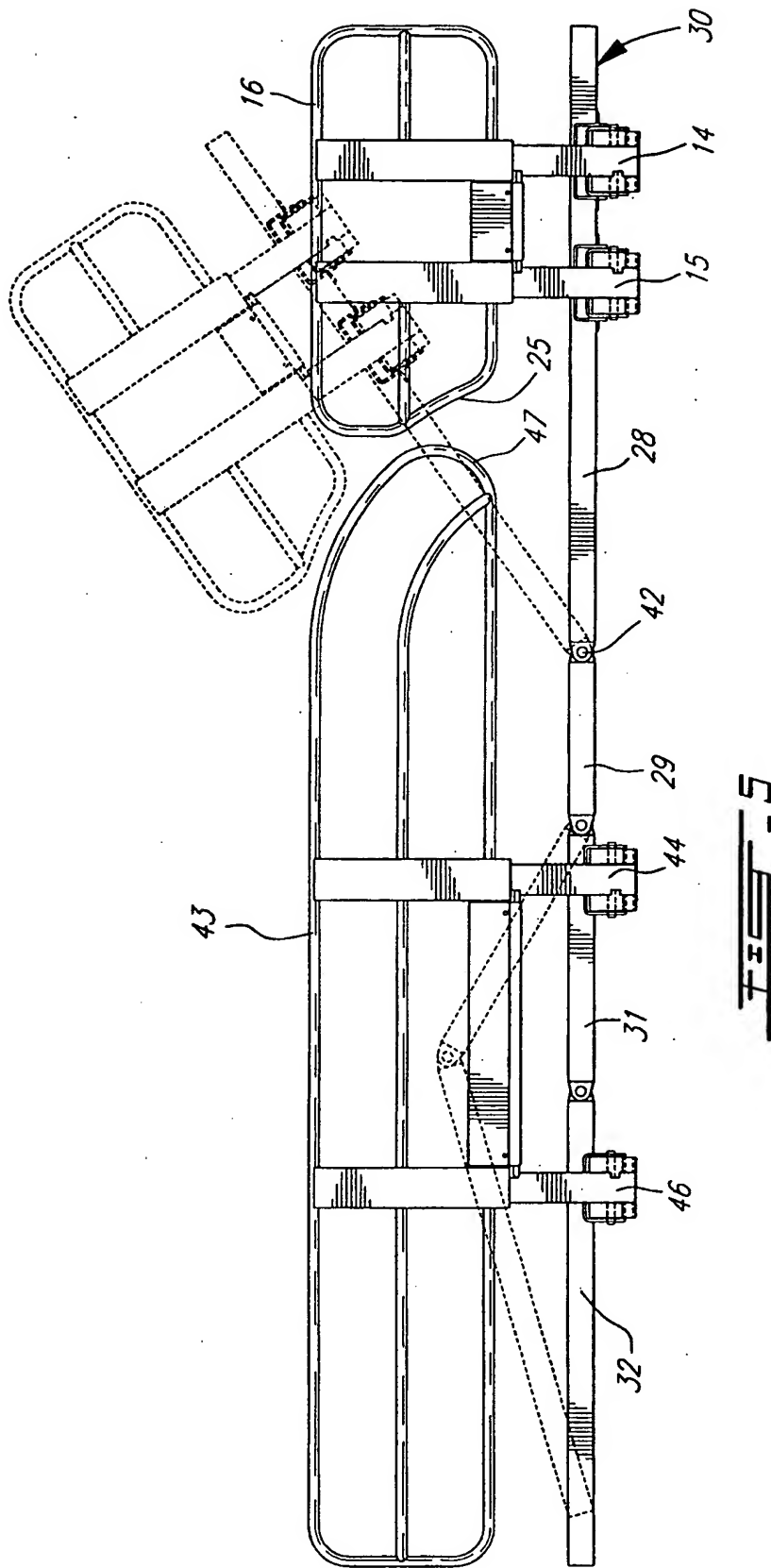


FIG. 4

*Andreas J. J. Dubuc & Martin W. Walker*

2181021



Andréau, Joly, Dubuc & Martineau, W. Allen

2181021

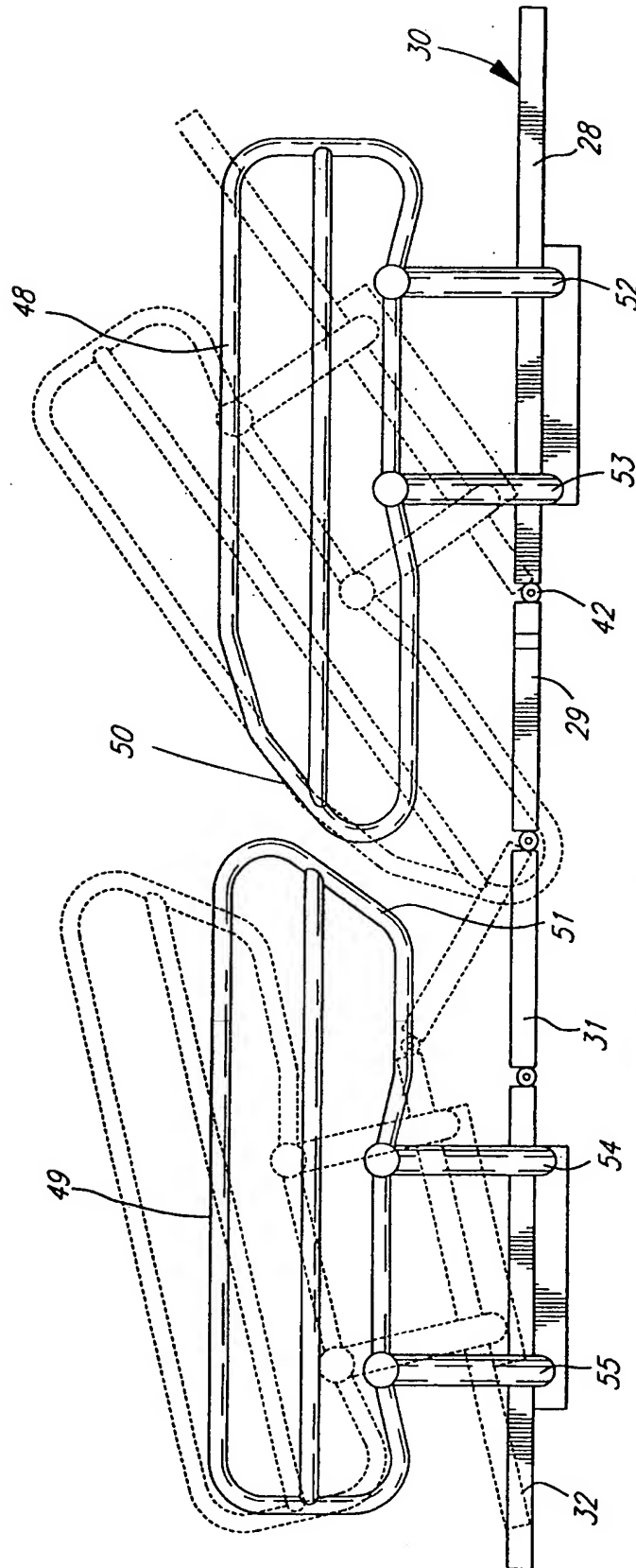


FIG. 6

Andréas J. J. Dubuc & Martin W. W. W.

2181021

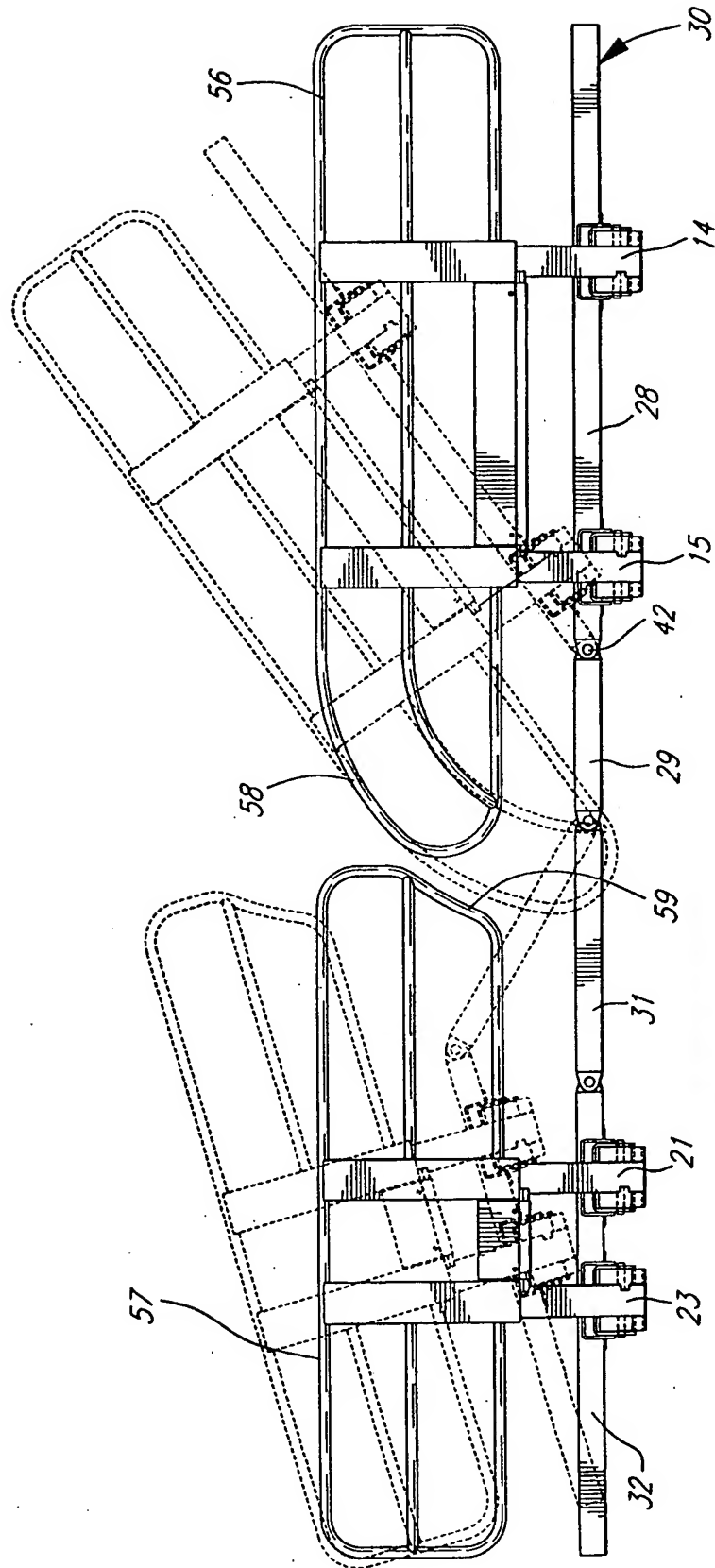


FIG. 7

*Andrew Jay Duke & Martin W. Wollen*